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expected to result from the cultivation of the minds of the poorer classes. The sensation which the subject appears to have excited in the sister island, is worthy of observation, where the system which has been adopted here, as far as circumstances appear to admit, has become the object of Royal patronage and munificence; and the committee feel confident, that the subject needs only to be brought fully before the view of those who are blessed with affluence, to induce them to imitate so bright an example: the institution is, besides, strongly recommended to every description of persons in this country, by the circumstance of its not involving in its management any topic, upon which the different sects of Christians disagree. Upon this plan it has been conducted for many years, and the beneficial effects resulting therefrom have been very conspicuous.

ALEXANDER MAGUIRE,
Chairman.

For the Belfast Monthly Magazine.

Medical Report of one of the Physicians of the Institution in Dublin for administering Medical Aid to the Sick Poor; and assisting them and their families with the necessities of life during Sickness; and for preventing the spreading of Contagious Diseases.

IT will be seen by an inspection of the lists, that the number of the sick has considerably diminished from the year 1810, being 510 less in the past year.

Indeed, the medical history of this district will be found in all respects more favourable for the year 1811, than for the preceding year. Not only has the quantity of disease been diminished, but the quality has appeared to be considerably milder.

During the greater part of the year 1810, a fever of unusual severity raged among the poorer classes of the metropolis, but chiefly in this populous and crowded district, which was fatal to many. During the prevalence of this fever, the other diseases also which were interspersed with it, appeared to assume part of its malignity. The measles in particular, which prevailed to a great extent during the Summer and Autumn, were unusually severe. In two cases out of those which the writer attended, the marks of a putrid disposition were clearly exhibited; and in several others, the symptoms were so ambiguous as to render it doubtful, whether blood-letting could with propriety be employed. As the winter advanced, the fever gradually declined, and left us ultimately with our usual proportion of contagious fever, which, even in seasons of least malignity, is the most prominent disease upon our catalogue, and forms a great majority in our annual lists.

It would be unsuited to the limits assigned to a short sketch like the present, to enter minutely into the inquiry, though one extremely useful and interesting, concerning the causes of contagious epidemic diseases; and among the rest, of the fever above-mentioned. The ingenious disquisitions of the American physicians, who were so deeply interested in this subject, and who have brought every argument into view, have left but little to the speculation of future theorists. The plain conclusion which the facts observed concerning those diseases, would suggest, appears to be, that the power of contagion, or the infection arising from the sick, acquires energy at particular seasons, from some unknown influence of the atmosphere, which in the present state of our knowledge it is impossible to ex-

plain. This unhealthy or infectious atmosphere, as it may be called, is doubtless favoured by all those causes which depress the strength and spirit of the body; poverty, (and its effects,) want, misery, and drunkenness. The poor are accordingly the great martyrs to epidemic diseases; the fever of 1810, which was scarcely felt among the rich, seemed to have levelled all its fury against the poor; whose crowded habitations gave facility to contagion, and among whom probably the want and scarcity of that particular year co-operated with the natural causes to diffuse the disease more widely.

After all the diligence which physicians have used in constructing Meteorological Tables, and preserving an accurate account of the weather, our knowledge as to its effects in the production of diseases is but little advanced. During the summer and autumn of the past year, when the heat and drought were excessive, which are generally considered to favour the production and propagation of contagious diseases, our catalogue of fever was rather diminished than increased; and these which occurred were as mild, as those of the former year were malignant.

Although we cannot explain the sudden rise and rapid progress of a contagious epidemic at some particular seasons rather than others, we can, however, point out one permanent and positive source of contagious fever in this district, and the other more populous parts of the metropolis: Namely, the wretchedly filthy state of the habitations and back-yards of the poor, and the lanes where they generally reside. There is scarcely a fact in natural philosophy more certainly established, than that the human frame cannot breathe for a length of time an atmosphere impregnated with putrid

effluvia, or the exhalations arising from putrid matter, without falling into malignant disorders. The jail and hospital fevers, and the dysentery of camps, are sufficient evidence of this.

In this very populous district, the disregard of cleanliness is perhaps more noxious than in other parts of the metropolis;—the bulk of the inhabitants of this quarter of the town, it is well known, is composed of poor weavers, who are not only confined over the loom throughout the day, but whose often numerous families are crowded into single apartments, the loom occupying the whole centre, and the beds of the family the corners of the room, in a manner the most unfavourable to cleanliness. Nothing can possibly be conceived more unpropitious to the human constitution, than the state in which many of these poor families live, confined several at work together in the same room through the day, in an atmosphere impregnated, in many instances, with the effluvia of a back-yard or stair-case, and entry actually overflowing with filth.

In many of those houses it is not uncommon to see the ruinous overflowing necessary openly communicating with the hall or stair-case, or the back part of the hall itself, and the cavity beneath the stairs, (horresco referens) converted into the common necessary and dunghill of the numerous inhabitants, and loading the air with their putridity. The writer has never seen houses of this description destitute of fever. Besides the houses, the lanes and alleys where the poorest people reside, are generally in such a miserable state of filth, that it is often with difficulty we can wade through them, to get at the miserable hovels of the sick.

Whether it is the immediate duty of any persons to attend to the cleanliness of these avenues, the writer

is ignorant ; but he feels it to be his duty, to point out one of the leading causes of contagious fever among the poor. It is remarkable, that in one narrow alley on the Coombe, called Still's-court, which is an exception to the above, being kept with great cleanliness and care, and whose proprietor deserves much applause, the writer did not meet, during two months in which he lately attended the district in which this alley lies, a single case of contagious fever. In dwelling even thus far on the miserable condition of the poor, of which the above description is but a partial outline, the writer fears he has not made sufficient allowance for the natural disgust of every reader to scenes of this kind. He has been led into it, merely by the hope of drawing the public attention to this important subject, and lessening the sources of disease and misery : but a much more ample and affecting detail will be found in the useful work of Mr. Whitelaw ; whose description, so far from exaggeration, is scarcely a full picture of the filth and misery the Dispensary physician daily witnesses. But it will naturally be said, where is the remedy for this state of things ; how shall we surround poverty with comfort and convenience, and want and misery with cleanliness and salubrity ?—This undoubtedly is to the whole extent impossible, but, in the writer's opinion, it is very possible considerably to diminish the evil ; and so far as it is possible, it is the office of humanity (and no city on earth can boast more of this virtue,) to mitigate the sufferings of the poor : and indeed it is the personal interest of the rich, to lessen the quantity of contagious fever among the poor, as it will infallibly extend occasionally from one class to the other ; there being scarcely an article of dress or food used by the one, which must not

pass through the hands of the other.

Much no doubt has already been done in the establishment of that excellent and useful institution, the Fever Hospital ; and if there is any thing still wanting to complete the benevolent object proposed by this institution, it is undoubtedly some plan to encourage and enforce cleanliness among the poor ; which, in the writer's opinion, would considerably lessen the number of the patients of this institution.

The most practicable plan which has occurred to the writer to diminish at least this evil, is the appointment of a few respectable citizens in each district, to whom the physicians of the Dispensary and of the Fever Hospital might report those houses, &c. they found in so filthy a state, as to be likely to be infectious to their inhabitants, and the neighbourhood. How far such a committee of citizens would be empowered by law to proceed, the writer is totally ignorant ; but he should imagine, the magistracy would lend every aid and sanction to so useful and benevolent a measure. The blame of ruinous and filthy houses is mostly to be attributed to the landlords, who live themselves perhaps in a distant part of the city, and never visit these wretched tenements but to receive the rent. If the more respectable citizens united to superintend this business, probably the law of opinion alone, the desire of preserving a fair character with respectable men, would induce these landlords to attend to those houses, and keep them in due repair.

During the past year, fortunately, the fevers have been more mild and less numerous than in the preceding year ; and in a great number of cases, of which the writer kept an account, yielded invariably to active purging at the commencement, and Diaphor-

etics, having been generally attended with abdominal pains, and exhibiting symptoms of acrimony in the *Primæ viæ*.

From the vast variety to be observed in fevers, both as to duration and intensity, their classification is extremely difficult. The proportion of nervous fever (typhus) to inflammatory (synochus) would appear, from the list, to be 1 in 7; but these fevers often graduate into each other, with such minute shades of difference, that physicians the most familiar with their habits, will differ in denominating them. Hence probably the great irregularity which the preceding annual lists exhibit in the numerical proportion of these two species of fever—on some years, the quantity of Typhus appears to be rather too small, and on others enormously large, while there is little difference in the total amount of fever. The form of fever which is generally to be met with among the poor of this district, is the Synochus of Dr. Cullen, in which the symptoms of inflammatory fever are succeeded by great debility, and the usual symptoms of Typhus. Instances, however, of pure Typhus, where the disease even from its commencement is attended with the Typhoid symptoms, occasionally occur; but, as far as the writer has observed, in a very small proportion to the other species. In both these forms of contagious fever, purging at the commencement appeared to moderate the subsequent symptoms, and to shorten the duration of the disease, and on the judicious combination of this with Diaphoretic and cordial medicines, depends the whole art of their treatment. As the poor are in general not very attentive to each other in sickness, we can seldom rely on their administration of the cold and tepid affusion in the proper man-

ner. It is needless to observe, that the cases of fever which fall under our care, are those which we cannot prevail upon to be removed to the Fever Hospital.

During the late winter months, a Catarrh, accompanied with inflammatory fever, and often with slight pneumonic symptoms, appeared to be the prevailing disease in the district the writer attended. It was only in a few of those cases he found blood-letting necessary, the cure being easily effected by antimonial diaphoretics, and warm diluents, largely employed, with laxatives.

Among the cases of pneumonia which occurred to the writer, one only was so severe as to require the repetition of blood-letting a third time—this patient (a man of 30) lost 48 oz. of blood in 36 hours, and though labouring under very formidable symptoms was a happy instance of the utility of this salutary remedy—the third bleeding was followed by a remission of all the symptoms, and a rapid recovery. The writer could not help however attributing some portion of the success of this case to small doses of Tart' of Antimony, employed after the second bleeding in such a manner as to excite a nausea only: shortly after its exhibition, a general moisture broke out upon the skin, which essentially contributed to the cure. Notwithstanding the prejudice of some physicians against the remedy, the writer thinks when cautiously administered, it will be found as manageable as most other active medicines.

Dysentery, which always occupies a large portion of our lists did not abate in quantity during the past year.

This disease is comparatively mild in our climate, and seems to acquire malignity and an infectious nature, only at particular seasons, or in camps,

where large bodies of men are assembled together. Whoever reads the accounts of Cleghorn and Pringle will imagine this a disease much more formidable than we generally find it in common life. It sometimes however prevails as an epidemic, and then assumes a much more severe and dangerous character. In the many instances of this disease the writer met with through the year, he has found the cure very speedily effected by the use of purgatives, and a pill taken at night of calomel and opium, and continued until the urgent symptoms disappear. Calomel even exclusive of its purgative effects seems to have some sort of specific power in this disease, and from its known salutary influence on the hepatic system, seems to point out that system as the source of the proximate cause of the disease; its effects indeed give confirmation in some measure to the opinion of Pringle, who thought the disease to arise from vitiated and acrimonious bile collected in the intestines, and producing that peculiar irritability which creates a tendency to spasm and stricture, symptoms always affecting the intestines in this complaint.

From the constant exposure of the poor to wet and cold, rheumatism is one of the most frequent disorders we have to contend with in the winter months. In the present season, though remarkably mild, we met with an unexpected and unusual number of persons afflicted with this disorder. Sweating, though a powerful remedy in rheumatism, is not in the writer's opinion so well suited to the condition of the poor, who are in general ill supplied with bed-clothes, and cannot, and often will not keep up the necessary warmth required for this process. He has accordingly been often disappointed

in the effects expected from the sudorific plan.

Concerning the use of the cinchona in rheumatism, there is much uncertainty and contradiction among the most respectable medical writers; some, as Fordyce, extolling it to the skies, and others, as Cullen, attributing to it little or no power. This variety of opinion, however, is not really extraordinary, when it is understood that the bark really observes a great variety in its effects, when administered in this disorder: with one patient it will often effect a rapid cure, while on another it will be almost quite inert. This uncertainty probably has arisen from the different stages of the disorder in which this medicine has been exhibited. After much attention to its effects, it appears to the writer that it is only when the acute fever has been in some measure subdued by evacuations, that the bark can be given with any tolerable hope of success; immediately after this has begun to abate, the bark will be found in many instances to produce a rapid cure. In the first stage of the acute rheumatism, or in chronic pains of any standing, he has seldom known it to do much good, though in the latter it will often give great relief, and he believes has never done harm. In the local pains of the hip and loins, the writer has often combined the bark with guaiacum, and with the turpentine, with apparent utility.

In the autumnal months cholera (a disease very familiar to the poor, and generally with them succeeding violent fits of intoxication) appeared to have rather increased in quantity and violence from the preceding year. Harrassing and debilitating as this disease is to an extreme degree, there is none perhaps in all the catalogue, with one or two excep-

tions, more certainly under the controul of medicine. The writer has met with several patients in this disease exhausted to the utmost debility, with a pulse scarcely perceptible, and a voice scarcely audible, restored in the course of a few hours by repeated doses of the tincture of opium. There is no disease perhaps where the powers of life are quickly sunk so low, and where the relief is so ready as that which this medicine bestows; none in which the poor patient is so strongly impressed with the virtue of medicine, or filled with so lively a gratitude; or which affords the physician so certain and pleasing a consciousness of having done good.

In small pox, a very considerable diminution appears in our present list: on the two preceding years the numbers were 40 and 44, whereas the amount in the present list is only 14, an inconsiderable number in a population, amounting, as it has been estimated, to 52 thousand souls. The reduction in this disease has been greater for the past year than since the foundation of the Institution, which no doubt is to be attributed to the progress of vaccination, and encourages the pleasing prospect of the total extinction of this disease. In the year 1804, indeed, the number of variolous patients was only 8, but the total number of patients in that year was not one-half as great as on the present.

The review of our annual list suggests an interesting inquiry, whether there is any difference between the diseases of the rich and poor, and what influence the different modes and habits of life in the different classes of society have in the generation of diseases.

From the great number of pectoral complaints our list exhibits, owing to the exposure of the poor to the inclemency of the weather, it might

be concluded that phthisis pulmonalis, or consumption of the lungs, must make great ravages among them. This, however, is not the case; the number marked in our present list, 80, is not very considerable, when compared to the total number of diseases, being only 1 in 106, and by no means so great, in the writer's opinion, as might be expected in an equal population of the rich, among whom this disease is very frequent and fatal. If this opinion be just, it must be inferred that the constant exercise of the body, the occupation of the mind, and living much in the open air, with the absence of those causes, which enervates both mind and body, give a vigour to the constitution which enables it to resist this disease.

Gout may be considered almost the peculiar disease of riches, our present list does not exhibit a single example of it: since the commencement of his attendance at the dispensary the writer individually has met with only one case of regular gout, and that was in a man who had been formerly in good circumstances.

Of apoplexy the list contains 8 only, a number assuredly much less than would have occurred, in an equal number of the rich, among whom this disease is very frequent.

Hypochondriasis and the lighter mental maladies which are known to afflict the higher classes to a great extent, are very rare among the poor. The number marked in the list is 8, but the writer has great doubts whether the most distressing form of the disease arising from extreme sensibility, namely the mental anguish so often complained of, even without the supposition of any bodily ailment, is ever to be met with among the poor. The form of this disease, which generally appears among them, is that in which the

patient supposes himself affected with a disease of which no external symptoms appear.

Chronic disorders of the liver and bowels appear to the writer to be much more frequent among the higher classes than among the other—a torpid state of the bowels and a vitiated secretion of the liver form indeed the constant plague of thousands in the higher orders. This may be attributed partly to inactive life, and partly to high seasoned food, and the constant use of wine or punch, which are peculiarly injurious to the hepatic system—the occasional intoxications of the poor, are not in the writer's opinion, near so injurious to the stomach and liver, as the constant and daily use of punch or wine, though taken in moderate quantity.

On the other hand acute diseases of every description are much more prevalent among the poor: contagious fever in particular, which is comparatively rare among the rich, is the great destroyer of the poor; and this fact affords an unanswerable argument in favour of cleanliness, which assuredly is the chief preserver of the rich.

J. O'B.

25, Stephen-Street.

January 30th, 1812.

To the Proprietors of the Belfast Magazine.

GENTLEMEN,

HAVING observed in your Magazine for February last, an account of an ingenious Optical experiment, which the author, J. S., in a very handsome manner recommends to my consideration, I have accordingly repeated the experiment, and find the results perfectly conformable to his account thereof.

It certainly appears not a little extraordinary, that a feather should produce on the rays of light passing through it, the same phenomena as a

multiplying glass cut into a number of facets; with this difference only, that the former separates the rays of which the spectrums are composed, into the prismatic colours, whereas the latter does not.

I apprehend, however, that a satisfactory solution of the phenomena may be found in that law of physical optics, by which the rays of light, in passing within certain minute distances of all solid opaque bodies, are *deflected* or bent out of the line of their motion, from such bodies, and at different angles, according to their different degrees of *deflexibility*, and are consequently separated into the prismatic colours, similar to what takes place on their passage through a prism.

If the Sun's rays are admitted into a darkened room, through a circular hole of $\frac{1}{10}$ of an inch diameter, made in a thin plate of lead; and if at 2 or 3 feet distance from the hole, the rays are again transmitted through a narrow aperture of the $\frac{1}{25}$ part of an inch wide, formed by two very straight and smooth knife edges of iron or steel, and blackened with ink to prevent all reflection: and if those rays are received on a sheet of white paper, from 6 to 12 inches behind the aperture, this beam of light passing through it, will, at each side of the direct light, be separated into four beautiful fringes, the colours of each fringe being arranged in the usual order—beginning with violet, next the direct light; then indigo blue, green, yellow, orange, and lastly, red.*

* This experiment was made by Sir Isaac Newton, who mentions *Grimaldi*, as having discovered that the Sun's rays are separated into coloured fringes in passing through a very narrow aperture. He also says, "By looking on the Sun, through a feather or black-riband, held close to the eye, several rainbows will appear." But there are several phenomena of these experiments